Roberts (A. S.)

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SPINAL ARTHROPATHIES

(A CLINICAL REPORT OF SIX CASES OF CHARCOT'S JOINTS).

WITH ILLUSTRATIONS.

BY

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THE SPINAL ARTHROPATHIES

(A CLINICAL REPORT OF SIX CASES OF CHARCOT'S JOINTS).[1]

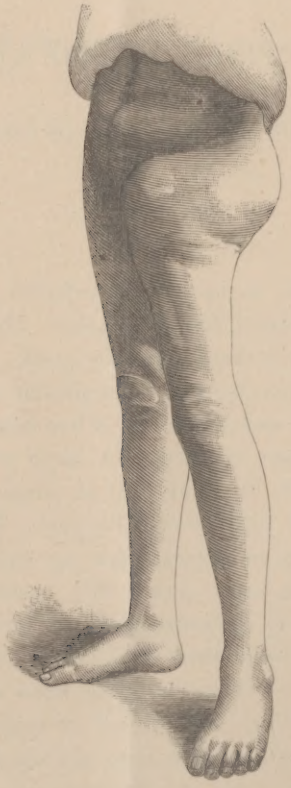
Case I.—M. K., male, æt. 41, referred to the New York Orthopædic Dispensary from St. Luke's Hospital on May 5, 1879. Hereditary history unusually good. He is a moderate drinker. Health excellent until manifestation of present joint trouble. Married, and the father of five healthy children.

Condition on date of entry: A large nodular tumor was found over the left hip-joint, oval in shape, the long axis of which corresponds with line of Poupart's ligament (Fig. 1). Transverse diameter of normal limb over hip-joint, 22 inches; of affected limb at same point, 30¼ inches. No muscular atrophy detected by measurements of circumference. Left limb 1⅜ inches shorter than its fellow; measurements made from the umbilicus. External iliac fossa of left side filled with osteophytes, which add to bulk of tumor. The ligamentous structures about the joint seem entirely destroyed; motion of limb abnormally free in all directions. Head of femur probably absorbed or greatly atrophied. Limb abducted and rotated outward. What appears as the head of the femur is anterior to its normal position, lying under a "shed" of bone, built out from the pelvis, which covers its atrophied extremity like an umbrella. When the patient flexes the limb, the upper

[1] Read, by invitation, at a meeting of the Neurological Society of Philadelphia, January 26, 1885.

extremity of the femur glides forward until it catches under this "shed" of provisional bone, which, acting as a fulcrum, allows the patient to flex and rotate the limb with ease.

Fig. 1.



A thorough examination of the patient for evidence of a central lesion, revealed the absence of numbness of limbs, of pain, or of constricting bands; sensation slightly impaired on left side. On right side, reflex action increased on titillation of soles; none on left. No tendon reflex in either limb. Sways with "closed eyes test."

Condition eighteen months later: The patient presented all the marked symptoms of locomotor ataxia. Two years from

date, upon which the above notes were recorded (May 5, 1879), he is confined to bed, with complete loss of muscular coördination.

Remarks.—The case exhibits an arthropathy existing four and a half years prior to the development of active tabetic symptoms, and shows a tendency, from early stages, to the

FIG. 2.

formation of osteophytes about the joint, with early atrophy of the upper epiphysis of the femur.

At no time during the progress of the lesion were there developed reflex neural symptoms that would point to joint inflammation.

The joint lesion (swelling and tumefaction) diminished as the active symptoms of ataxia advanced. Provisional callus was thrown out about the atrophied extremity of the femur as a substitute for the destroyed acetabulum.

Case II.—O. P., male, æt. 44. Registered as an out-patient in the New York Orthopædic Dispensary on January 29, 1879. The following notes were recorded.

Hereditary History.—Parents living and healthy; one brother died of phthisis. Patient is married; has three children, two in excellent health; the third has an intrapelvic abscess (subsequently died of amyloid degeneration of the kidneys). Patient has had to work very hard, with considerable mental anxiety; no other known cause for present disease.

The left knee and ankle (Fig. 2) are enlarged, the latter more so relatively than the knee. The patient states that seven years ago, while working, a heavy box fell upon him, injuring the ankle. The joint became swollen, and he was "laid up for two months." He recovered, and suffered no inconvenience for one year; the swelling again returned in the same ankle and involved the entire leg. At this time he was incapacitated from work for three months; recovered, and has had no active joint symptoms since. Has never had an abscess about the joint.

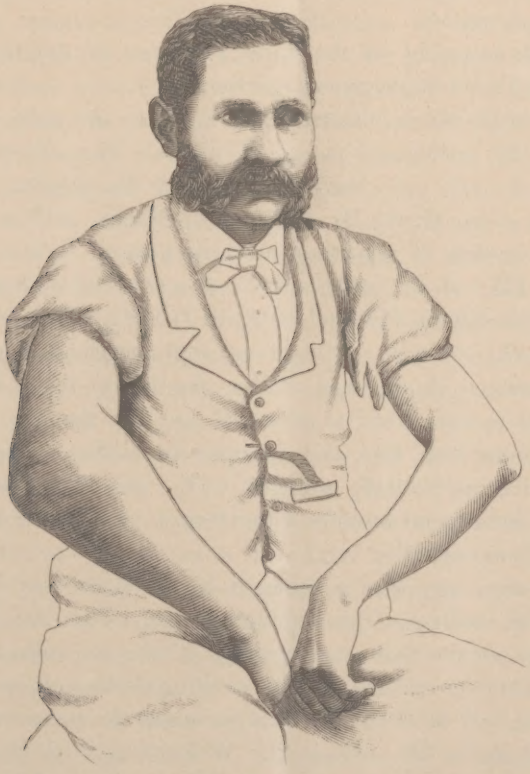
The urgent symptoms at present examination are those of locomotor ataxia. He cannot walk without staggering, and when attempting to do so in the dark, or with closed eyes, falls. Suffers from ataxic pains in the right leg and arm. Is uncertain in guiding his finger to the tip of his nose, with eyes closed, or in putting his heel on a designated spot. Sensation impaired in right hand and arm; has difficulty in buttoning his coat with that hand. When standing, or walking in his bare feet, he feels as though he were on cushions; vision unimpaired (eye-ground not examined).

On February 4, 1879, Dr. Cloves Adams saw the patient in consultation, and thought him to be suffering from locomotor ataxia in the third stage, with osseous changes in left ankle and synovitis of both knees.

The patient returned to the dispensary in September of the same year, with a marked elastic swelling of the right elbow-joint (Fig. 3).

A year later (November, 1880), he was referred to the clinic of Dr. E. C. Seguin. He again applied to the Orthopædic Dispensary on February 14, 1881. The ataxic symptoms had advanced; he walked with extreme difficulty. The condition of the joints remained about the same as when last examined, now four months ago.

Fig. 3.



During November (1881) the patient was critically examined by Dr. S. Weir Mitchell, and pronounced to be in the third stage of locomotor ataxia, with spinal arthropathies of the right elbow and left ankle-joints. It was noted that the circumference of the elbow tumor had materially diminished since the last measurements were recorded (decrease of two and a half inches).

Remarks.—The joint enlargements in this patient presented three characteristic peripheral ataxic conditions:

1st. At the knee-joint synovial irritation, indicated by the physical signs of a chronic synovitis although at no time during its course was there evidence of inflammation.

2d. A characteristic doughy, nodular ataxic joint tumor of the elbow, largely composed of osteophytes and excessive synovial secretion.

3d. Hypertrophy of the lower epiphyses of the tibia and fibula; with but slight synovial irritation.

The peripheral manifestations at the knee and ankle accompanied the earlier symptoms of ataxia; the elbow tumor entered abruptly upon the second stage of the sclerosis. I am indebted to my friend Dr. Newton M. Shaffer, of New York, for the privilege of reporting the above notes.

Case III.—J. H., male, æt 45; was admitted to my wards in the Philadelphia Hospital on April 3, 1883. The following notes were recorded: A vigorous, well-nourished man, with little personal knowledge of his family or their history. Knew his parents lived to advanced age, but thought both of his brothers had died, and likewise two sisters. Acknowledged to being strongly addicted to the use of alcohol. He thought his present trouble arose from a "dissipated life and constitutional syphilis."

Two years ago, after a debauch, his attention was directed to painful swelling of his right great toe. This lasted a few days, and as the pain and swelling of the toe subsided, the right ankle-joint enlarged. This swelling slowly and painlessly increased, and three months from its onset, the same condition appeared in the left ankle-joint. Without especial discomfort to the patient, this joint enlarged. He continued drinking to excess, and was admitted to the hospital in a state of chronic alcoholism.

An examination two weeks after admission, when all traces of alcoholism had subsided, gave evidence by the following facts of a central lesion: He had suffered from constricting

pains about the abdomen, and occasional darting pain in the region of the hips and thighs for the past year. He also experiences considerable difficulty in walking, especially at night. At present, he has a staggering gait. Absence of patellar reflex in both limbs: sways and falls with "closed eyes test," and has difficulty in finding tip of nose with forefinger when eyes are closed.

The metatarso-phalangeal articulation of the right great toe is ankylosed. Both ankle-joints are enlarged apparently by a diffuse hypertrophy of the epiphyses of tibia and fibula. This increase has almost doubled their normal circumference. The subcutaneous tissues are slightly œdematous. The capsules of ankle-joints are distended and elastic.

When first admitted, the tissues about the ankles and legs were swollen, presenting the appearance of diffuse cellulitis. This subsided in a few days from rest and local treatment.

My colleague, Dr. C. K. Mills, saw the patient with me in consultation, and confirmed the diagnosis I had made—of posterior spinal sclerosis, with accompanying arthropathies at ankle-joints.

Remarks.—The joint hypertrophy had preceded any active symptoms of ataxia. The character of the joint enlargement was that of bony hypertrophy, without a tendency to the formation of osteophytes or to nodular irregularity of contour.

The possibility of rheumatism or malignant disease was considered and dismissed. A thorough physical examination failed to detect any of the characteristic reflex neural symptoms of an epiphyseal ostetitis.

The history of the progress and course of the ankle-joint hypertrophy, together with the evidence of a central lesion and the negative physical signs of local joint inflammation, all confirmed the diagnosis of an arthropathy of spinal origin.

Case IV.—Dr. A. A. Y., male, æt. 65, resident of Hammonton, N. J. Examined the patient with Dr. S. Weir Mitchell on January 16, 1885. For the substance of the following notes I am indebted to Dr. Woodnutt.

Hereditary history of patient excellent. He had always been strong and healthy during youth and up to 1865; though a hard-working farmer. An army life, and three years of extreme exposure prior to the close of the war, found him suffering in 1865 from sharp, wandering pains in the upper and lower extremities; never noticed, however, in the articulations. Loss of power followed in the right leg. Three years later suppurative arthritis attacked the metatarso-phalangeal articulation of the right great toe, and last phalanx of left ring finger, sequestra coming away in each instance.

During 1870 the patient first noticed an œdematous swelling of the right elbow; following shortly upon this, the wrist-joint of the same arm gradually and painlessly enlarged. Then a distention of the capsule of the right knee-joint succeeded. The enlargement of the latter articulation was more rapid than either the wrist or elbow. Rheumatic pains in the joints accompanied the swelling and deformity.

The left limb has been comparatively exempt from pain. Recently, however, the capsule of the knee-joint has become distended and elastic. The elbow tumor has diminished somewhat in circumference during the past four years.

During the past year the distal phalanx of the right index finger has gradually atrophied, without inflammation, and is entirely wanting. The nail and finger end are normal, though somewhat shortened. Pain at present is chiefly in both feet, paroxysmal and erratic, often attacking corresponding points on the legs.

The present appearance of the right elbow and knee-joint enlargements (Fig. 4) exhibit an irregular nodulated hypertrophy, bearing no resemblance to normal joint outline, and consisting chiefly of osteophytes and abnormal increase of synovial fluid. Motion preternaturally free in all directions; structure of joints apparently entirely destroyed.

Remarks.—The joint lesions first appeared in this patient after ataxia had become established. The appearance of the affected elbow and knee is that of an enormous nodular hyper-

trophied mass of bone, doubling their normal circumference, associated with synovial distention of the capsule. Osteophytes readily movable within the capsule, and varying in size from a pigeon's egg to that of a turkey.

Fig. 4.

The atrophy of the distal phalanx of the right index finger is especially to be noted. It is the first instance of complete absorption of the diaphysis of bone that I have had an opportunity of observing.

Case V.—W. H. McC., male, æt. 38, married. Admitted to the Orthopædic Dispensary of the University Hospital in July, 1883.

Hereditary history excellent: no evidence could be obtained of articular disease, rheumatism, or phthisis in any member of his family. He presented at the date of examination the appearance of a healthy well-nourished man. Has always worked industriously at his trade of plumber. A moderate drinker. He had constitutional evidence of syphilis, following a chancre contracted in 1863.

Fig. 5.

The patient attributes the present enlargement of the right ankle-joint to an injury received while working in a cramped position. Following this strain, the ankle became suddenly discolored and swollen, bursting the buttons from his shoes. He was incapacitated for work during the succeeding four days: at the end of a week the discoloration and swelling had

about disappeared. His attention was then first directed to a bony enlargement of the right ankle-joint. This slowly and painlessly increased in size without any appreciable interference in locomotion. At present examination the enlargement resembles a simple hypertrophy of the lower epiphyses of the tibia and fibula (Fig. 5). The outline of the joint is globular, with slight elasticity of capsule. No pain or reflex muscular spasm.

Record of Spinal Symptoms.—Complains of darting pains about hips. Has difficulty in walking at night. Sways with closed eyes. Complete absence of patellar reflex on both sides. Dr. Horatio C. Wood saw him with me in October of 1883, and pronounced him ataxic.

Remarks.—This case presents an arthropathy that apparently followed a direct traumatism to the affected joint. From careful interrogation, I determined that the acute swelling and ecchymosis resulted from rupture of a varicose vein, inasmuch as these were numerous, and greatly engorged about the affected ankle. This first attracted his attention to the ankle, the deeper bony growth being detected when the active symptoms of subcutaneous swelling had subsided.

The hypertrophy of the joint has increased the circumference four and a half inches over its fellow.

Case VI.—A specimen of shoulder-joint arthropathy, lately removed at an autopsy held upon the body of a well-marked ataxic, has been referred to me by Dr. S. Weir Mitchell, to embody in this report. The joint had become suddenly and painlessly enlarged in the later stages of the central lesion. It presented ante-mortem all the characteristic symptoms of a tabetic arthropathy: distention of the capsule, abnormal mobility, and the presence of osteophytes. The joint, upon examination, presented the following structural changes:

1st. Cartilage covering head of humerus eroded; that upon glenoid cavity irregularly thickened.

2d. Anterior margin of glenoid cavity worn away, allowing the head of bone to rest in position of forward dislocation.

3d. Osteophytes abundant about junction of capsule with anatomical neck. Marked relaxation of ligamentous structures, and distention of capsule.

4th. General hypertrophy of epiphysis, somewhat nodular at margins. Evidences of hydrarthrosis.

The practical deductions to be drawn from a clinical study of the above somewhat anomalous cases, may be briefly summarized as follows:

Period of Development.—1st. The tabetic arthropathies may occur independently, or precede the active symptoms of locomotor ataxia.

2d. They occasionally develop suddenly, late in the course of a posterior spinal sclerosis.

Nature of Lesions.—The peripheral expression of central nerve irritation is characterized by the following changes found in the structure of the various articulations.

1st. A chronic asthenic hyperæmia of the synovial membranes; a hydrarthrosis.

2d. An interstitial atrophy of the epiphyses.

3d. A fungous or rarefying epiphyseal hypertrophy.

4th. The formation of osteophytes and bony stalactites.

These various joint lesions characteristic of the spinal arthropathies may exist separately; but are usually combined in the same subject.

Differential Diagnosis.—They may be readily distinguished from the common inflammatory diseases of the epiphyses by the total absence of the reflex neural phenomena—*i. e.*, of pain, both reflex and local, the apprehensive state regarding joint movements, and the reflex or tetanic spasm of the muscles, always associated with joint osteitis. Abscess is never directly associated with the arthropathies, unless incident upon direct traumatism.

They are more difficult to differentiate from malignant affections of the articulations; but a careful inquiry into the history and course of the lesion, and the presence or absence of central disturbance, are our most reliable guides.

Course.—The progress of the arthropathies is essentially chronic. Occurring, not infrequently, early in the history of the tabetic lesion, they slowly increase, with occasional exacerbations, and years elapse before fully matured. Their course is self-limiting, though never reparative.

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